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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS MANAGEMENT

MA-891988

DEP USE ONLY	
Auth No. 1245074	APS No. 757937
Site No. 721520	PF No. 744754
Client No. 279489	SF No. 1049231

SEP 10 2018

DEP, SOUTHWEST REGION
WASTE MANAGEMENT

APPLICATION FOR INACTIVE WELL STATUS

Well Operator Triana Energy, LLC		DEP Client ID No. 279489	Well Permit or Registration No. 37-051-24464	
Address 500 Lee Street, East			Well Farm Name MAWC 7020	Well No. 3H
City Charleston	State WV	Zip Code 25301	County Fayette	Municipality Springfield
Telephone No. 304-205-8503	Fax No. 304-380-0149	Bond Instrument No. LOC12-1002	Is this an application for annual extension of inactive status? ☒ Yes ☐ No	
			Check here if this application is being submitted for conditional inactive status in association with longwall mining: ☐	

Condition of the Well

Describe in detail how the condition of the well satisfies the criteria for approval of inactive status. See 25 Pa. Code §§ 78/78a.102(i), (2)(i) or (ii) and (3). Use additional sheets if necessary. If available, attach well records, driller's logs, and other information describing well casing, cement, equipment, and any other pertinent information. Note that if this application is being submitted in conformance with DEP Technical Guidance Document 800-0810-004 *Guidelines for Chain Pillar Development and Longwall Mining Adjacent to Unconventional Wells*, the Well Record/Completion Report may be referenced for all well construction information, and all tubing and annular pressures should be at 0 prior to adjacent longwall mining encroaching within 1,500 feet of the well location. Finally, all annuli should be open to the atmosphere and the inactivation procedure may be referenced under the section titled "Other information about the well's condition."

Well Type: ☒ Gas ☐ Oil ☐ Combination Oil & Gas ☐ Injection ☐ Storage ☐ Disposal

Casing Diameters: 20"	Casing Lengths: 62 ft	Type and amount of cement (sacks) used for surface casing: Class A 15.6ppg - 661 cf
13 3/8"	700 ft	Tubing or Production Casing Pressure (current): N/A
9 5/8"	2291 ft	If an oil well, state the depth to fluid in the surface casing: N/A
Tubing or production casing diameter: 5 1/2"	Tubing or production casing length: 14,035'	Annulus Pressure (current - between tubing or production casing and surface casing): No pressure
Are all annuli open to atmosphere? ☒ Yes ☐ No		

Other information about the well's condition:

Well was drilled to TD, but not completed, due to depressed Natural Gas markets in the local area.

Future Use of the Well

Describe a viable plan in accordance with 25 Pa. Code §78/78a.102(4) explaining the intended use of the well within a reasonable time. Provide the information requested below and any other information necessary for DEP to make a determination on inactive status for this well. Note that if this application is being submitted in conformance with DEP Technical Guidance Document 800-0810-004 *Guidelines for Chain Pillar Development and Longwall Mining Adjacent to Unconventional Wells*, the following text may be entered under the section regarding the future plan for the well: "Return well to production subsequent to final panel extraction when mining is at least 1,500 feet beyond well in chain pillar, as per re-entry procedure and TGD."

Provide certification that one of the following applies (check one):

☒ Significant reserves remain in place and I plan to return the well to production.

Provide estimate of reserves: MMcf: 2,000 Bbls:

The well will be used for: ☐ Disposal ☐ Storage ☐ Observation ☐ Injection - Recovery ☐ Other (describe)

This well will be returned to use in: Month: June

Year: 2023

State your plan for future use of the well.

Future use dependant on successful completion of planned nearby interstate pipeline takeaway capacity. Triana Energy respectfully requests time to allow these projects to provide more economic markets.

Conditional Inactive Status Checklist

For unconventional wells drilled in anticipated chain pillar locations that are being temporarily inactivated to accommodate planned, adjacent longwall mining, please provide the items included in the checklist below in addition to this application. More specific information about these items is detailed in DEP Technical Guidance Document 800-0810-004 *Guidelines for Chain Pillar Development and Longwall Mining Adjacent to Unconventional Wells*.

Please include the following items with the inactive status application:

- ☐ Temporary Well Inactivation Procedure
 ☐ Temporary Inactivation Well Schematic
 ☐ General Specifications for Cements/Gels
☐ Current Well Record and Completion Report
 ☐ Well Location Plat
 ☐ Electrical/Mechanical Well Logs
☐ Graphical Production History Summary
 ☐ Well Re-entry Procedure
 ☐ Post-mining Well Long-term Monitoring Procedure

Provide additional details, if necessary.

A significant length of production pipeline is required to move gas from this well to market. Final engineering and funding decisions depend on completion of proposed interstate pipelines, which would provide for more economic market opportunities.

Signature of Applicant (Well Operator)

Signature W. C. Showen, III Date 9-5-2018

Print or type signer's name and title: Walter C. Showen, III, Reg.Mgr

DEP USE ONLY

☒ Approved ☐ Denied Date 10/20/18
 by (DEP Manager): [Signature]



December 1, 2011

Rachelle A. King
Director of Regulatory Affairs
900 Virginia Street East Suite 600
Charleston, WV 25301
(304) 205-8560 (Office/Fax)
(304) 205-8560 (Cell)

Pa Department of Environmental Protection
Southwest Regional Office
Mr. Alan Eichler
400 Waterfront Drive
Pittsburgh, Pa 15222

Re: Triana Energy, LLC MAWC 7020 3H Well API 37-051-24464-00-00

Well Record

Dear Mr. Babb

Please find enclosed the Well Record and Directional Drill survey information for the MAWC 7020 3H Well.

Should you have questions, please feel free to contact myself at the above phone number.

Sincerely,

Rachelle A. King



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

Well Record

DEP USE ONLY	
Site ID	Primary Fac ID
Client Id	Subfacility Id

WELL INFORMATION										
Well Operator TRIANA ENERGY LLC			DEP ID# 279489		Well API # (Permit / Reg) 37-051-24464-00-00			Project Number		Acres
Address 900 VIRGINIA ST E				Well Farm Name MAWC 7020			Well # 3H		Serial #	
City CHARLESTON			State WV	Zip Code 25301		County FAYETTE		Municipality SPRINGFIELD		
Phone 304-205-8560		Fax 304-205-8560		Email rking@trianaenergy.com			USGS 7.5 min. quadrangle map MILL RUN			
Check the appropriate Submission: ☒ Original Well Record ☐ Amended Well Record										
Well Type		☒ Gas ☐ Oil ☐ Combination Oil & Gas ☐ Injection ☐ Storage ☐ Disposal								
Well Orientation		☒ Vertical ☒ Deviated from Vertical (Side view and Deviated Survey must be attached)								
Drilling Method		☒ Rotary - Air ☒ Rotary - Mud ☐ Cable Tool								
Date Drilling Started 10/3/11	Date Drilling Completed 11/14/11	Surface Elevation 1427 ft.		Total Depth - Driller 14041 ft.		Total Depth - Logger n/a ft.		Depth of Deepest Fresh Groundwater none reported ft.		
CEMENT										
Cement returned on surface casing?		☒ Yes ☐ No		If No, provide top of cement and method used to determine:						
Cement returned on coal protective casing?		☒ Yes ☐ No		If No, provide top of cement and method used to determine: ☐ N/A						
Cement returned on intermediate casing?		☒ Yes ☐ No		If No, provide top of cement and method used to determine: ☐ N/A						
Casing String	Type of Cement			Amount of Cement			Gas Block (or equivalent) Used			
Conductor	Readi Mix			to surface						
Surface							☐ Yes ☐ No ☐ N/A			
Coal Protective	Class A 15.6ppg			661 cf			☐ Yes ☒ No ☒ N/A			
Intermediate	Lead-65/35Poz12.7ppg,Tail-Class A 1.18ppg			962 cf			☐ Yes ☒ No ☐ N/A			
Production	Lead-VeriCem14.2ppg/Tail-HalCem14.8ppg			2655 cf			☐ Yes ☒ No ☐ N/A			
							☐ Yes ☐ No ☐ N/A			
							☐ Yes ☐ No ☐ N/A			
							☐ Yes ☐ No ☐ N/A			
CASING AND TUBING										
Hole Size	Pipe Size	Wt.	Thread / Weld	Casing / Tubing Type	Amount in Well (ft.)	Packer / Hardware / Centralizers			Date Run	
Type	Size	Depth								
30"	20"	55	Weld	LS	62'				10/3/11	
17.5"	13-3/8"	48	Thread	H-40	700'	2bask, 5cent		var	10/11/11	
12.375"	9-5/8"	40	Thread	J-55	2292'	5cent		var	10/13/11	
8-3/4"	5-1/2"	20	Thread	P-110	14035'	99cent		var	11/16/11	
If any casing is welded, provide the name of the welder: Butch's Rathole Service										
Also complete the Log of Formations on back (page 2)										

LOG OF FORMATIONS

Well API#: 37-051-24464-00-00

(If you will need more space than this page, please photocopy the blank form before filling it in.)

Formation Name or Type	Top (feet)	Bottom (feet)	Gas at (feet)	Oil at (feet)	Water at (fresh / brine; ft.)	Source of Data
Subfloor	0	12				GR - Pilot hole
Sand and shale	12	160				"
Shale and Sand	160	210				"
Sand	210	400				"
Sand and Shale	400	575				"
Shale	575	610				"
Sand and shale	610	700				"
Shale	700	730				"
Sand	730	910				"
Shale	910	940				"
Sand and shale	940	1220				"
Shale	1220	1250				"
Sand and shale	1250	1575				"
Shale	1575	1900				"
Sand and shale	1900	2190				"
5 th Sand	2190	2225				"
Shale	2225	2320				"
Shale and Sand	2320	2680				"
Sand and shale	2680	3300				"
Shale and Sand	3300	5075				"
Shale	5075	6500				"
Horizontal Well MDs						Mudlog/MWD GR
Shale	6500	7345				"
Burket	7345	7385				"
Tully limestone	7385	7440				"
Shale	7440	8125				"
Marcellus	8125	TD				"
	TMD	14041				"

I do hereby certify to the best of my knowledge, information and belief that the well identified on this Well Record has been properly cased and cemented in accordance with the requirements of 25 Pa. Code Chapter 78 and any conditions contained in the permit for this well. In addition, I do hereby certify that any casing which is attached to a blow-out preventer with a pressure rating greater than 3,000 psi has passed a pressure test in accordance with 25 Pa. Code §78.84(f). I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator's Signature

DEP USE ONLY

Reviewed by:

Date:

Title:

Date:

Comments:

Job Number: ADR110348
 Company: TRIANA ENERGY
 Lease/Well: MAWC 7020-3H
 Location: FAYETTE CO.
 Rig Name: HIGHLANDS #11
 RKB: ☐
 G.L. or M.S.L.: ☐

State/Country: PA / USA
 Declination: -8.63° WEST
 Grid: REFERENCED TO GRID NORTH
 File name: C:\WINSERVE\MAWC7020.SVY
 Date/Time: 14-Nov-11 / 03:34
 Curve Name: MAWC 7020-3H Work Curve

Directional Drilling Contractors

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane 276.65
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00
100.00	.08	217.19	100.00	-.06	-.04	.04	.08
200.00	.17	217.19	200.00	-.23	-.18	.15	.08
300.00	.25	217.19	300.00	-.52	-.40	.33	.08
400.00	.34	217.19	400.00	-.93	-.71	.59	.08
500.00	.42	217.19	500.00	-1.46	-1.11	.93	.08
600.00	.50	217.19	599.99	-2.10	-1.59	1.34	.08
700.00	.59	217.19	699.99	-2.86	-2.17	1.82	.08
800.00	.67	217.19	799.98	-3.73	-2.83	2.38	.08
900.00	.75	217.19	899.97	-4.72	-3.58	3.01	.08
966.00	.81	217.19	965.97	-5.44	-4.13	3.47	.08
1000.00	.64	209.00	999.97	-5.80	-4.37	3.66	.58
1100.00	.38	146.21	1099.96	-6.57	-4.45	3.66	.58

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Dogleg Severity Deg/100
1200.00	.74	95.63	1199.96	-6.91	-3.62	2.80	.58
1252.00	1.01	86.89	1251.95	-6.91	-2.83	2.01	.58
1300.00	.98	89.50	1299.94	-6.89	-2.00	1.19	.12
1400.00	.92	95.51	1399.93	-6.96	-3.35	-4.5	.12
1500.00	.87	102.30	1499.92	-7.19	1.18	-2.00	.12
1564.00	.84	107.03	1563.91	-7.43	2.10	-2.95	.12
1600.00	.62	106.15	1599.91	-7.57	2.54	-3.40	.60
1700.00	.04	48.18	1699.91	-7.69	3.09	-3.96	.60
1800.00	.58	293.24	1799.90	-7.47	2.65	-3.50	.60
1876.00	1.04	291.63	1875.90	-7.06	1.65	-2.46	.60
1900.00	.93	295.50	1899.89	-6.90	1.28	-2.07	.54
2000.00	.56	326.83	1999.88	-6.14	.28	-.98	.54
2100.00	.59	22.55	2099.88	-5.25	.20	-.81	.54
2130.00	.68	34.37	2129.88	-4.97	.36	-.94	.54
2200.00	.64	25.23	2199.87	-4.27	.76	-1.25	.16
2300.00	.61	10.55	2299.87	-3.25	1.10	-1.47	.16
2400.00	.62	355.50	2399.86	-2.18	1.15	-1.40	.16
2421.00	.63	352.48	2420.86	-1.96	1.13	-1.35	.16
2500.00	.39	298.95	2499.86	-1.39	.83	-.99	.64
2600.00	.76	241.85	2599.85	-1.54	-.05	-1.13	.64
2700.00	1.36	227.78	2699.84	-2.65	-1.52	1.20	.64
2738.00	1.59	225.24	2737.82	-3.32	-2.22	1.82	.64
2800.00	1.30	229.20	2799.80	-4.39	-3.37	2.84	.49
2900.00	.86	241.11	2899.79	-5.49	-4.88	4.21	.49
3000.00	.52	272.35	2999.78	-5.84	-5.99	5.27	.49
3022.00	.48	284.11	3021.78	-5.81	-6.17	5.46	.49
3100.00	.33	269.78	3099.78	-5.73	-6.72	6.01	.23
3200.00	.22	226.92	3199.78	-5.86	-7.15	6.42	.23
3300.00	.30	178.85	3299.77	-6.26	-7.29	6.51	.23
3333.00	.36	170.07	3332.77	-6.45	-7.27	6.47	.23
3400.00	.32	173.70	3399.77	-6.85	-7.21	6.37	.07
3500.00	.27	181.02	3499.77	-7.36	-7.19	6.29	.07
3600.00	.22	191.78	3599.77	-7.78	-7.23	6.28	.07

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Dogleg Severity Deg/100
3648.00	.20	198.65	3647.77	-7.95	-7.27	6.31	.07
3700.00	.04	226.73	3699.77	-8.05	-7.32	6.34	.31
3800.00	.28	6.10	3799.77	-7.83	-7.32	6.36	.31
3900.00	.59	8.87	3899.77	-7.08	-7.22	6.35	.31
3964.00	.79	9.50	3963.76	-6.32	-7.09	6.31	.31
4000.00	.77	12.51	3999.76	-5.84	-7.00	6.27	.13
4100.00	.71	21.83	4099.75	-4.61	-6.62	6.04	.13
4200.00	.68	32.37	4199.74	-3.54	-6.07	5.62	.13
4278.00	.67	41.08	4277.74	-2.80	-5.53	5.17	.13
4300.00	.58	41.68	4299.74	-2.62	-5.37	5.03	.42
4400.00	.16	53.17	4399.73	-2.16	-4.92	4.64	.42
4500.00	.27	207.93	4499.73	-2.29	-4.92	4.62	.42
4567.00	.55	212.73	4566.73	-2.70	-5.17	4.82	.42
4600.00	.38	173.80	4599.73	-2.94	-5.24	4.87	1.06
4700.00	1.07	96.19	4699.72	-3.37	-4.28	3.86	1.06
4800.00	2.10	86.02	4799.68	-3.34	-1.52	1.12	1.06
4900.00	3.14	82.57	4899.58	-2.86	3.02	-3.33	1.06
4915.00	3.30	82.24	4914.56	-2.75	3.86	-4.15	1.06
5000.00	4.13	80.07	4999.38	-1.89	9.30	-9.45	.99
5100.00	5.11	78.43	5099.05	-.38	17.21	-17.13	.99
5200.00	6.10	77.31	5198.57	1.68	26.75	-26.38	.99
5235.00	6.44	77.00	5233.36	2.53	30.48	-29.98	.99
5300.00	6.82	83.32	5297.93	3.80	37.86	-37.17	1.27
5393.00	7.49	91.10	5390.20	4.33	49.41	-48.57	1.27
5400.00	7.39	95.75	5397.15	4.27	50.31	-49.48	8.71
5421.00	7.40	110.00	5417.97	3.68	52.93	-52.15	8.71
5453.00	7.30	110.53	5449.71	2.26	56.77	-56.12	.38
5500.00	5.43	120.48	5496.42	.08	61.48	-61.06	4.61
5515.00	4.88	125.21	5511.36	-64	62.61	-62.27	4.61
5610.00	4.52	142.06	5606.04	-5.93	68.22	-68.44	1.50
5704.00	4.55	173.34	5699.76	-12.55	70.93	-71.90	2.60
5798.00	2.90	202.82	5793.57	-18.45	70.44	-72.10	2.63
5800.00	2.95	202.43	5795.57	-18.54	70.40	-72.07	2.46

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Dogleg Severity Deg/100
5900.00	5.29	191.62	5895.30	-25.43	68.49	-70.97	2.46
6000.00	7.71	187.51	5994.65	-36.60	66.68	-70.47	2.46
6019.00	8.17	187.00	6013.47	-39.20	66.35	-70.44	2.46
6051.00	6.49	163.50	6045.22	-43.20	66.59	-71.14	10.63
6100.00	6.15	182.44	6093.92	-48.47	67.26	-72.42	4.29
6145.00	6.45	199.89	6138.66	-53.26	66.30	-72.02	4.29
6200.00	5.29	206.82	6193.37	-58.42	64.10	-70.44	2.47
6240.00	4.51	214.03	6233.22	-61.37	62.39	-69.08	2.47
6300.00	3.11	227.46	6293.09	-64.43	59.87	-66.93	2.75
6335.00	2.45	241.90	6328.05	-65.42	58.51	-65.69	2.75
6400.00	1.95	200.54	6393.00	-67.11	56.90	-64.29	2.50
6430.00	2.13	180.00	6422.99	-68.15	56.72	-64.23	2.50
Last Gyro Survey							
6493.00	1.70	203.32	6485.95	-70.18	56.35	-64.10	1.40
6533.00	2.40	228.50	6525.93	-71.28	55.49	-63.37	2.81
6564.00	5.30	219.10	6556.85	-72.82	54.10	-62.17	9.54
6596.00	8.50	210.30	6588.62	-76.01	51.97	-60.42	10.50
6627.00	11.60	205.80	6619.14	-80.79	49.46	-58.48	10.31
6659.00	13.90	203.80	6650.35	-87.21	46.51	-56.29	7.32
6691.00	16.00	203.10	6681.26	-94.78	43.23	-53.91	6.59
6723.00	17.90	201.70	6711.87	-103.41	39.68	-51.38	6.07
6754.00	19.80	200.10	6741.21	-112.77	36.11	-48.93	6.35
6785.00	21.60	198.50	6770.21	-123.11	32.50	-46.53	6.09
6817.00	23.50	197.20	6799.76	-134.79	28.74	-44.16	6.14
6848.00	26.00	196.90	6827.91	-147.20	24.94	-41.81	8.07
6880.00	27.90	199.40	6856.43	-160.97	20.41	-38.91	6.91
6911.00	29.80	202.00	6883.59	-174.96	15.11	-35.27	7.34
6943.00	31.40	202.80	6911.13	-190.01	8.90	-30.85	5.16
6974.00	34.10	202.90	6937.20	-205.47	2.39	-26.17	8.71
7006.00	36.60	203.40	6963.30	-222.49	-4.89	-20.91	7.86
7037.00	39.80	203.80	6987.65	-240.05	-12.56	-15.32	10.35
7069.00	42.20	204.10	7011.80	-259.24	-21.09	-9.08	7.53
7101.00	44.70	205.80	7035.03	-279.18	-30.38	-2.16	8.62

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Dogleg Severity Deg/100
7133.00	45.60	208.40	7057.60	-299.37	-40.71	5.77	6.41
7164.00	45.40	208.80	7079.33	-318.79	-51.30	14.03	1.12
7196.00	46.30	208.90	7101.62	-338.90	-62.37	22.71	2.82
7228.00	47.30	209.10	7123.53	-359.30	-73.68	31.58	3.16
7260.00	47.70	209.10	7145.14	-379.91	-85.16	40.59	1.25
7291.00	47.60	209.30	7166.03	-399.91	-96.33	49.38	.58
7323.00	47.60	209.10	7187.61	-420.54	-107.86	58.44	.46
7354.00	47.60	209.30	7208.51	-440.52	-119.03	67.22	.48
7386.00	47.40	209.40	7230.13	-461.09	-130.60	76.32	.67
7417.00	46.90	209.50	7251.21	-480.88	-141.77	85.13	1.63
7449.00	46.50	209.30	7273.16	-501.17	-153.20	94.13	1.33
7481.00	46.80	209.60	7295.12	-521.43	-164.64	103.15	1.16
7512.00	49.50	210.30	7315.80	-541.44	-176.17	112.29	8.87
7544.00	51.70	211.80	7336.12	-562.61	-188.93	122.51	7.77
7575.00	52.70	215.20	7355.12	-583.03	-202.45	133.57	9.25
7606.00	53.50	218.70	7373.74	-602.84	-217.35	146.08	9.39
7637.00	54.30	221.90	7392.00	-621.93	-233.55	159.96	8.73
7669.00	55.60	224.90	7410.38	-640.96	-251.55	175.63	8.68
7701.00	56.30	227.70	7428.30	-659.27	-270.72	192.55	7.57
7732.00	57.50	229.90	7445.23	-676.37	-290.26	209.98	7.09
7764.00	59.20	231.50	7462.02	-693.62	-311.34	228.92	6.81
7795.00	60.30	233.90	7477.64	-709.84	-332.64	248.20	7.57
7827.00	61.30	235.90	7493.26	-725.90	-355.49	269.04	6.29
7859.00	62.60	237.90	7508.30	-741.32	-379.15	290.75	6.85
7890.00	63.40	241.70	7522.38	-755.21	-403.02	312.85	11.22
7922.00	63.40	243.90	7536.71	-768.29	-428.46	336.61	6.15
7953.00	64.10	246.60	7550.42	-779.92	-453.71	360.34	8.13
7985.00	65.10	249.90	7564.15	-790.63	-480.55	385.76	9.83
8017.00	65.80	252.80	7577.45	-799.93	-508.13	412.08	8.53
8048.00	66.50	254.80	7589.99	-807.84	-535.35	438.20	6.32
8080.00	67.30	256.00	7602.54	-815.26	-563.84	465.63	4.26
8111.00	68.90	258.90	7614.11	-821.51	-591.91	492.79	10.10
8143.00	69.40	260.60	7625.50	-826.83	-621.34	521.41	5.20

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Dogleg Severity Deg/100
8174.00	71.40	263.50	7635.90	-830.86	-650.25	549.66	10.92
8206.00	72.40	265.10	7645.84	-833.88	-680.52	579.37	5.69
8238.00	74.50	268.50	7654.96	-835.59	-711.14	609.59	12.12
8269.00	76.30	270.70	7662.77	-835.79	-741.13	639.36	8.99
8301.00	77.20	271.90	7670.11	-835.09	-772.27	670.37	4.61
8333.00	78.90	272.90	7676.73	-833.78	-803.55	701.59	6.13
8364.00	80.80	274.30	7682.19	-831.86	-834.00	732.06	7.57
8396.00	82.70	276.50	7686.79	-828.88	-865.53	763.72	9.03
8427.00	84.30	277.50	7690.30	-825.12	-896.10	794.52	6.08
8459.00	85.50	278.40	7693.14	-820.71	-927.66	826.38	4.68
8490.00	86.90	279.70	7695.19	-815.85	-958.21	857.28	6.16
8522.00	87.60	279.70	7696.73	-810.46	-989.71	889.20	2.19
8553.00	89.30	280.90	7697.57	-804.92	-1020.20	920.12	6.71
8584.00	90.30	280.80	7697.68	-799.09	-1050.65	951.04	3.24
8616.00	92.00	280.80	7697.03	-793.09	-1082.07	982.95	5.31
8647.00	91.80	281.80	7696.01	-787.02	-1112.45	1013.83	3.29
8679.00	92.20	283.40	7694.89	-780.05	-1143.66	1045.64	5.15
8711.00	91.20	284.40	7693.94	-772.36	-1174.71	1077.37	4.42
8742.00	90.10	286.10	7693.59	-764.21	-1204.62	1108.01	6.53
8774.00	88.70	287.60	7693.92	-754.93	-1235.24	1139.51	6.41
8805.00	88.00	287.40	7694.82	-745.62	-1264.79	1169.94	2.35
8836.00	88.40	288.00	7695.79	-736.20	-1294.31	1200.35	2.33
8868.00	88.30	286.50	7696.71	-726.71	-1324.86	1231.79	4.70
8900.00	88.10	286.00	7697.72	-717.76	-1355.56	1263.32	1.68
8931.00	88.40	286.50	7698.66	-709.09	-1385.31	1293.88	1.88
8963.00	87.20	286.80	7699.89	-699.93	-1415.95	1325.37	3.87
8994.00	86.20	285.60	7701.68	-691.29	-1445.67	1355.88	5.03
9025.00	86.50	285.70	7703.65	-682.95	-1475.46	1386.44	1.02
9057.00	86.90	286.30	7705.49	-674.14	-1506.17	1417.96	2.25
9088.00	87.40	286.40	7707.03	-665.43	-1535.87	1448.48	1.64
9119.00	87.40	285.20	7708.44	-657.00	-1565.67	1479.06	3.87
9151.00	88.20	285.50	7709.67	-648.53	-1596.51	1510.66	2.67
9182.00	89.00	286.80	7710.43	-639.91	-1626.27	1541.23	4.92

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Dogleg Severity Deg/100
9214.00	88.90	286.00	7711.01	-630.88	-1656.97	1572.76	2.52
9246.00	89.80	287.00	7711.37	-621.79	-1687.65	1604.29	4.20
9277.00	90.20	287.40	7711.37	-612.62	-1717.26	1634.76	1.82
9309.00	90.60	286.50	7711.15	-603.29	-1747.87	1666.25	3.08
9340.00	90.30	286.50	7710.91	-594.49	-1777.59	1696.79	.97
9372.00	89.50	285.50	7710.96	-585.67	-1808.35	1728.36	4.00
9403.00	90.10	286.50	7711.07	-577.12	-1838.15	1758.95	3.76
9435.00	90.00	285.40	7711.04	-568.33	-1868.92	1790.53	3.45
9466.00	90.20	285.20	7710.99	-560.15	-1898.82	1821.18	.91
9498.00	90.90	286.10	7710.68	-551.52	-1929.63	1852.78	3.56
9531.00	91.10	285.70	7710.11	-542.48	-1961.36	1885.35	1.36
9561.00	90.40	284.00	7709.71	-534.79	-1990.36	1915.03	6.13
9593.00	90.50	284.00	7709.46	-527.05	-2021.41	1946.77	.31
9624.00	90.70	283.90	7709.14	-519.58	-2051.49	1977.52	.72
9655.00	90.50	283.20	7708.81	-512.32	-2081.62	2008.29	2.35
9687.00	90.60	283.00	7708.51	-505.06	-2112.79	2040.09	.70
9719.00	90.60	283.10	7708.17	-497.84	-2143.96	2071.89	.31
9750.00	90.90	283.00	7707.77	-490.84	-2174.16	2102.69	1.02
9781.00	91.30	283.60	7707.17	-483.71	-2204.32	2133.48	2.33
9813.00	91.00	283.20	7706.53	-476.29	-2235.44	2165.25	1.56
9845.00	90.20	284.10	7706.19	-468.74	-2266.54	2197.01	3.76
9877.00	90.60	285.10	7705.97	-460.68	-2297.50	2228.70	3.37
9908.00	90.60	284.70	7705.65	-452.71	-2327.46	2259.38	1.29
9940.00	91.20	285.90	7705.14	-444.26	-2358.32	2291.01	4.19
9972.00	90.60	285.70	7704.64	-435.55	-2389.11	2322.60	1.98
10003.00	90.10	286.00	7704.45	-427.09	-2418.93	2353.20	1.88
10035.00	90.30	287.30	7704.34	-417.92	-2449.59	2384.71	4.11
10066.00	89.50	285.80	7704.39	-409.09	-2479.30	2415.25	5.48
10098.00	88.50	285.10	7704.95	-400.56	-2510.14	2446.86	3.81
10129.00	88.50	285.00	7705.76	-392.52	-2540.07	2477.52	.32
10161.00	88.70	284.80	7706.54	-384.29	-2570.98	2509.18	.88
10193.00	89.50	286.10	7707.05	-375.77	-2601.82	2540.80	4.77
10224.00	89.70	285.50	7707.26	-367.33	-2631.65	2571.40	2.04

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Dogleg Severity Deg/100
10256.00	89.60	285.10	7707.46	-358.88	-2662.51	2603.04	1.29
10287.00	89.90	285.10	7707.59	-350.81	-2692.44	2633.70	.97
10319.00	91.30	285.70	7707.26	-342.31	-2723.29	2665.33	4.76
10351.00	91.30	285.90	7706.53	-333.60	-2754.07	2696.91	.62
10382.00	91.20	284.80	7705.86	-325.40	-2783.96	2727.55	3.56
10414.00	91.40	285.40	7705.13	-317.06	-2814.85	2759.19	1.98
10445.00	92.60	285.60	7704.05	-308.78	-2844.70	2789.80	3.92
10477.00	92.70	284.70	7702.57	-300.43	-2875.55	2821.42	2.83
10508.00	93.10	285.80	7701.00	-292.29	-2905.42	2852.03	3.77
10540.00	93.20	285.50	7699.24	-283.67	-2936.19	2883.59	.99
10572.00	93.20	284.40	7697.46	-275.42	-2967.06	2915.20	3.43
10603.00	93.10	284.00	7695.75	-267.83	-2997.07	2945.89	1.33
10635.00	93.60	284.60	7693.88	-259.94	-3028.02	2977.55	2.44
10666.00	94.10	285.00	7691.80	-252.04	-3057.93	3008.17	2.06
10698.00	94.70	286.30	7689.35	-243.43	-3088.65	3039.68	4.46
10729.00	94.90	286.00	7686.75	-234.84	-3118.32	3070.14	1.16
10761.00	95.30	286.10	7683.91	-226.03	-3148.95	3101.59	1.29
10792.00	93.80	285.10	7681.45	-217.72	-3178.71	3132.12	5.81
10824.00	93.30	285.50	7679.47	-209.29	-3209.52	3163.69	2.00
10855.00	93.10	287.70	7677.74	-200.45	-3239.18	3194.17	7.12
10887.00	92.80	286.50	7676.09	-191.05	-3269.72	3225.60	3.86
10919.00	93.70	288.00	7674.28	-181.58	-3300.23	3257.00	5.46
10950.00	93.90	288.00	7672.22	-172.02	-3329.65	3287.33	.65
10982.00	94.20	286.80	7669.96	-162.48	-3360.11	3318.69	3.86
11013.00	94.40	286.60	7667.64	-153.59	-3389.72	3349.13	.91
11045.00	94.70	286.80	7665.10	-144.43	-3420.27	3380.54	1.13
11076.00	93.50	287.90	7662.88	-135.20	-3449.79	3410.92	5.25
11108.00	92.60	286.50	7661.18	-125.76	-3480.31	3442.33	5.20
11139.00	92.80	287.20	7659.72	-116.78	-3509.95	3472.81	2.35
11171.00	92.70	286.20	7658.18	-107.60	-3540.56	3504.28	3.14
11203.00	93.40	287.20	7656.48	-98.41	-3571.17	3535.75	3.81
11234.00	93.30	285.70	7654.67	-89.65	-3600.85	3566.24	4.84
11266.00	92.20	284.90	7653.13	-81.22	-3631.68	3597.84	4.25

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Dogleg Severly Deg/100
11298.00	92.70	285.80	7651.77	-72.75	-3662.51	3629.44	3.22
11329.00	93.00	285.50	7650.22	-64.40	-3692.32	3660.02	1.37
11361.00	93.30	285.20	7648.47	-55.94	-3723.13	3691.61	1.32
11392.00	93.60	285.60	7646.60	-47.73	-3752.97	3722.19	1.61
11424.00	93.30	284.30	7644.67	-39.49	-3783.83	3753.80	4.16
11456.00	93.80	285.60	7642.69	-31.25	-3814.68	3785.40	4.35
11487.00	93.80	284.20	7640.64	-23.29	-3844.57	3816.01	4.51
11519.00	92.80	283.70	7638.80	-15.59	-3875.58	3847.70	3.49
11550.00	92.40	283.70	7637.39	-8.26	-3905.66	3878.43	1.29
11582.00	91.60	285.10	7636.27	-30	-3936.64	3910.12	5.04
11614.00	91.20	284.30	7635.49	7.81	-3967.58	3941.79	2.79
11645.00	91.30	283.80	7634.82	15.34	-3997.65	3972.53	1.64
11677.00	91.90	284.50	7633.92	23.16	-4028.66	4004.24	2.88
11708.00	92.00	284.60	7632.87	30.94	-4058.65	4034.93	.46
11740.00	92.40	285.30	7631.64	39.19	-4089.55	4066.57	2.52
11771.00	93.00	286.00	7630.18	47.54	-4119.36	4097.15	2.97
11803.00	93.20	286.10	7628.45	56.38	-4150.07	4128.68	.70
11835.00	93.50	286.20	7626.58	65.26	-4180.76	4160.19	.99
11866.00	93.70	286.20	7624.63	73.89	-4210.47	4190.70	.65
11898.00	93.90	285.70	7622.51	82.67	-4241.17	4222.21	1.68
11929.00	93.00	285.30	7620.64	90.94	-4270.98	4252.78	3.18
11961.00	93.30	285.80	7618.89	99.50	-4301.77	4284.35	1.82
11993.00	93.70	285.80	7616.93	108.20	-4332.50	4315.88	1.25
12024.00	92.50	285.10	7615.26	116.45	-4362.34	4346.47	4.48
12056.00	92.40	285.20	7613.89	124.80	-4393.20	4378.09	.44
12088.00	92.90	286.10	7612.41	133.42	-4423.98	4409.66	3.21
12120.00	92.90	285.10	7610.79	142.02	-4454.76	4441.23	3.12
12151.00	93.40	285.90	7609.09	150.29	-4484.58	4471.82	3.04
12183.00	93.40	284.80	7607.19	158.75	-4515.39	4503.39	3.43
12214.00	93.00	285.10	7605.46	166.73	-4545.29	4534.02	1.61
12246.00	93.00	284.90	7603.78	175.00	-4576.16	4565.64	.62
12278.00	93.10	284.50	7602.08	183.11	-4607.07	4597.28	1.29
12309.00	93.50	284.80	7600.30	190.94	-4637.01	4627.92	1.61

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Dogleg Severity Deg/100
12341.00	94.20	284.90	7598.15	199.12	-4667.87	4659.52	2.21
12372.00	93.40	285.70	7596.09	207.28	-4697.71	4690.10	3.65
12404.00	93.00	286.00	7594.31	216.01	-4728.44	4721.64	1.56
12436.00	92.70	286.00	7592.72	224.82	-4759.16	4753.18	.94
12467.00	92.70	284.60	7591.26	232.99	-4789.03	4783.79	4.51
12498.00	92.20	285.10	7589.93	240.93	-4818.97	4814.45	2.28
12530.00	92.00	284.60	7588.76	249.12	-4849.88	4846.10	1.68
12562.00	91.80	284.70	7587.70	257.21	-4880.82	4877.77	.70
12593.00	90.50	283.30	7587.07	264.71	-4910.89	4908.51	6.16
12625.00	90.20	283.80	7586.88	272.21	-4942.00	4940.27	1.82
12657.00	90.70	283.80	7586.63	279.84	-4973.08	4972.02	1.56
12688.00	91.10	284.10	7586.14	287.31	-5003.16	5002.77	1.61
12720.00	91.30	283.60	7585.47	294.97	-5034.22	5034.51	1.68
12752.00	91.30	283.50	7584.74	302.47	-5065.32	5066.27	.31
12783.00	90.80	284.30	7584.18	309.91	-5095.41	5097.02	3.04
12815.00	90.20	284.50	7583.90	317.87	-5126.40	5128.72	1.98
12846.00	90.00	284.70	7583.84	325.68	-5156.40	5159.42	.91
12878.00	90.10	284.30	7583.82	333.70	-5187.38	5191.12	1.29
12910.00	90.40	283.80	7583.68	341.46	-5218.42	5222.86	1.82
12941.00	90.60	283.30	7583.41	348.73	-5248.56	5253.63	1.74
12973.00	90.40	283.60	7583.13	356.17	-5279.68	5285.41	1.13
13005.00	91.10	285.30	7582.71	364.15	-5310.66	5317.11	5.74
13036.00	91.60	284.90	7581.98	372.23	-5340.59	5347.76	2.07
13068.00	91.60	284.50	7581.08	380.34	-5371.53	5379.43	1.25
13099.00	90.60	284.30	7580.49	388.05	-5401.55	5410.14	3.29
13131.00	90.30	283.40	7580.24	395.71	-5432.61	5441.89	2.96
13162.00	90.40	282.90	7580.05	402.76	-5462.80	5472.69	1.64
13194.00	90.90	283.70	7579.68	410.12	-5493.94	5504.47	2.95
13225.00	91.50	284.10	7579.04	417.57	-5524.03	5535.22	2.33
13256.00	91.50	284.10	7578.22	425.12	-5554.08	5565.95	.00
13288.00	89.80	284.60	7577.86	433.05	-5585.08	5597.65	5.54
13320.00	89.30	284.70	7578.11	441.14	-5616.04	5629.34	1.59
13352.00	89.10	284.10	7578.56	449.10	-5647.03	5661.05	1.98

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	Dogleg Severity Deg/100
13383.00	88.40	285.60	7579.23	457.04	-5676.99	5691.72	5.34
13414.00	88.60	284.70	7580.05	465.14	-5706.90	5722.37	2.97
13446.00	89.20	285.10	7580.66	473.37	-5737.82	5754.03	2.25
13478.00	88.60	284.70	7581.28	481.60	-5768.74	5785.69	2.25
13509.00	88.70	285.50	7582.01	489.67	-5798.66	5816.35	2.60
13541.00	88.40	285.50	7582.82	498.22	-5829.48	5847.96	.94
13572.00	88.60	286.30	7583.63	506.71	-5859.29	5878.54	2.66
13604.00	88.80	285.30	7584.35	515.42	-5890.07	5910.13	3.19
13635.00	89.80	287.40	7584.73	524.14	-5919.81	5940.68	7.50
13667.00	90.20	287.10	7584.73	533.63	-5950.37	5972.13	1.56
13699.00	90.30	286.60	7584.59	542.91	-5981.00	6003.63	1.59
13730.00	90.50	286.70	7584.38	551.79	-6010.70	6034.16	.72
13762.00	91.00	287.10	7583.96	561.09	-6041.31	6065.64	2.00
13794.00	91.50	287.00	7583.26	570.47	-6071.90	6097.11	1.59
13826.00	91.70	286.90	7582.37	579.80	-6102.50	6128.58	.70
13857.00	92.10	287.80	7581.34	589.04	-6132.07	6159.03	3.18
13888.00	92.50	289.20	7580.09	598.87	-6161.44	6189.34	4.69
13920.00	92.70	287.40	7578.64	608.90	-6191.79	6220.65	5.65
13951.00	93.10	288.50	7577.07	618.44	-6221.24	6251.01	3.77
13983.00	93.50	287.80	7575.23	628.40	-6251.60	6282.31	2.52
Straight Line Projection to Bit							
14041.00	93.50	287.80	7571.69	646.09	-6306.72	6339.11	.00